

A grey rectangular device with rounded corners, labeled 'EC10-D DIGITAL DOOR CONTROLLER', is centered within a black ribbon-like graphic that has pointed ends extending to the left and right. The entire assembly is set against a white background with a large, rounded rectangular border.

***EC10-D***

***DIGITAL DOOR CONTROLLER***

***"User manual"***

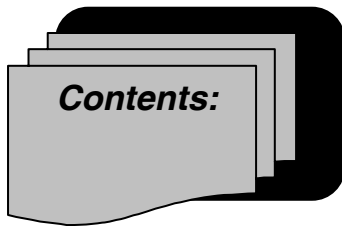
***Version: B4.85***

***Software: AFP 15***

***Manufacture by: [AFP ELEVATOR Co.](http://www.afpelevator.com)***

*[www.afpelevator.com](http://www.afpelevator.com)*





**..... Overview**

**Chapter 1:**

**A) Introduction:**

|   |           |
|---|-----------|
| <b>1- Accessories.....</b>                      | <b>8</b>  |
| <b>2- Dimension.....</b>                        | <b>9</b>  |
| <b>3- Installing suggestion.....</b>            | <b>10</b> |
| <b>4- Door suspension.....</b>                  | <b>10</b> |
| <b>5- The output &amp; input terminals.....</b> | <b>11</b> |
| <b>6-Wiring plan.....</b>                       | <b>13</b> |

**Chapter 2:**

**C) Initializing System:**

|   |           |
|---|-----------|
| <b>1-Introducing the panel parts.....</b> | <b>17</b> |
| <b>2- Setting and programming.....</b>    | <b>18</b> |
| <b>3- Selecting the door type.....</b>    | <b>19</b> |

**Chapter 3:**

**D) The Professional Setting:**

|  |           |
|--|-----------|
| <b>1- The professional system.....</b>           | <b>25</b> |
| <b>2- Traveling time definitions.....</b>        | <b>27</b> |
| <b>3- Protection against sensors damage.....</b> | <b>29</b> |

**Chapter 4:**

**E) Trouble Shooting:**

**Chapter 5:**

**F) Attachments:**

|   |           |
|---|-----------|
| <b>1- How To change the drive type?.....</b>                    | <b>37</b> |
| <b>2- The Parameter Difference in Different Situations.....</b> | <b>38</b> |
| <b>3- Indicator message.....</b>                                | <b>39</b> |



**:: Over view**

## Digital Door Controller      EC – 10D

### **Features:**

- *Designed for soft movement for different cabin doors*
- *Digital control & programming for desired movement ability*
- *Powerful software to control system in closing and opening cycle independent of each other*
- *Encoder optional controlling*
- *Designed for controlling DC motors ( 24v – 3A)*
- *Four segment, panel – mountable LED display / keypad*
- *Ability to regulate all movement parameters through a keypad*  
*Containing timing, fluxes, speeds (max, min, acceleration, deceleration curves)*
- *With Various safety system (reversing system, nudging...)and failures(high voltage, thermal protection and signal failure)*
- *Protection against output short-circuit*

Congratulations for choosing this door controller. This system is designed for the best possible function. Therefore, it has both intelligent controller system and full software setting. According to full wave system use all decelerations and accelerations in all movements can be separately controlled. It is to be said that this drive is setted by door default parameters while testing in the factory.

**By reading this Manuel, before install and use, learn more about its abilities.**

# Introduction

## *Chapter1*

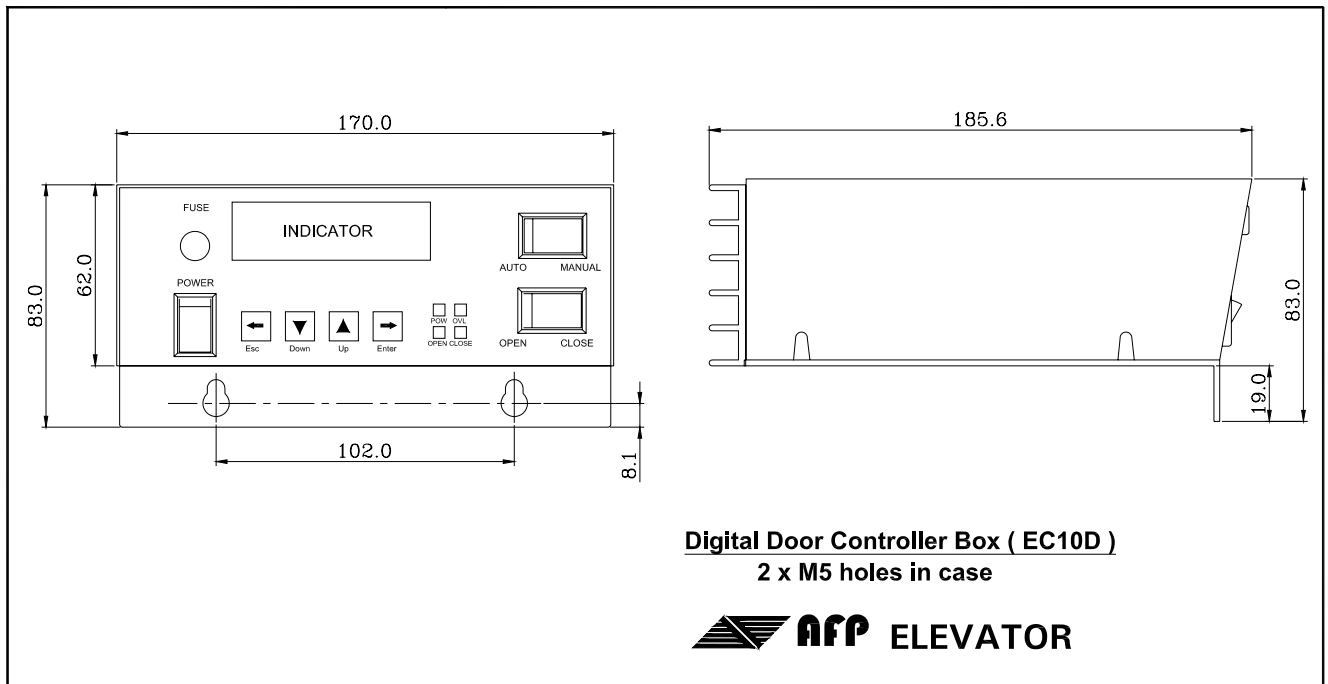
## 1- Accessories:

- 1- Four magnet switches with wire
- 2- Two magnets
- 3- Screw driver
- 4- Installation guide
- 5- Three terminals
- 6- Seven screws

.....



## 2- Dimension:

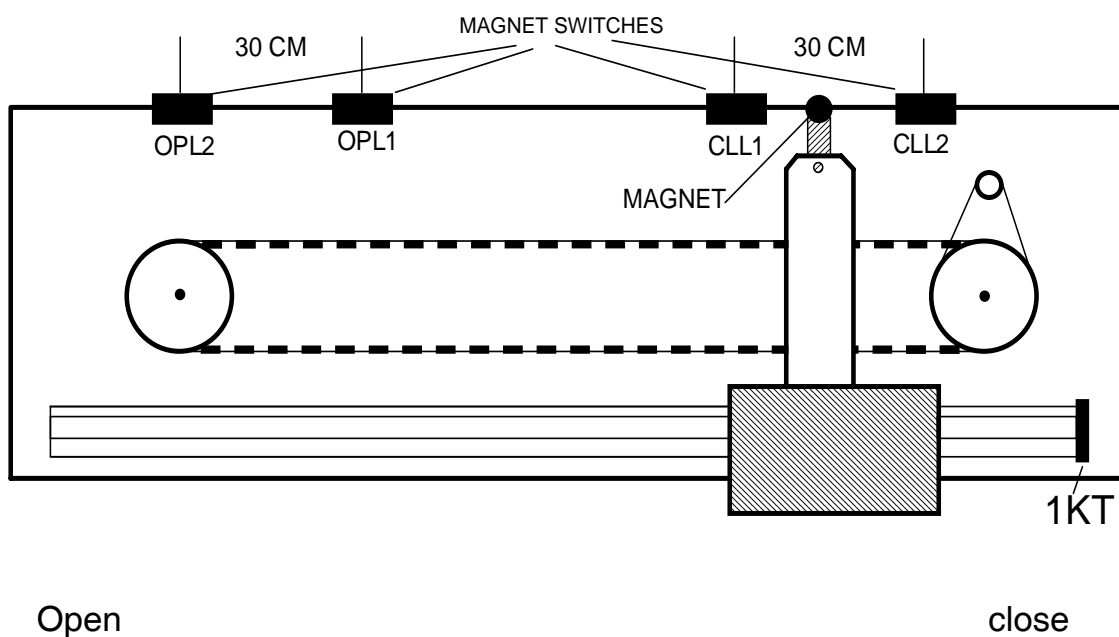


### **3- Installation Suggestion:**

CLL2 and OPL2 sensors install point is where the door is at the end of its movement (both opening and closing). Incorrect install of sensors causes wrong function.

- Neither make sure that magnet distance from magnet switch is correct not too far nor too close (about 2 cm is fine).
- Magnet switches are NO (Normally Open) type.

#### 4- Door suspension:



## 5- The output & input terminals:

| Terminal Number | Terminal Name | Input Output | Description  | LEDs situation |
|-----------------|---------------|--------------|--|----------------|
| 1,2             | <b>OVL</b>    | Output       | Output Relay Overload close contact relay (while closing if a passenger is in the door way the door won't close).      | Off            |
| 3               | <b>OPEN</b>   | Input        | Open door command input which is not activated in this version (this port gets its commands from elevator controller). | Off            |
| 4               | <b>CLOSE</b>  | Input        | Close door command input (this port gets its commands from elevator controller).                                       | Off            |
| 5               | <b>COM</b>    | -----<br>—   | Open & close terminals common terminal   | ----           |
| 6               | <b>OPL1</b>   | Input        | First open sensor feedback(this sensor decreases speed)  | Normally open  |
| 7               | <b>OPL2</b>   | Input        | Second open terminal feedback(this sensor stops door movement)   | Normally open  |
| 8               | <b>COM</b>    | -----<br>—   | OPL1 & OPL2 terminals common terminal  | ----           |
| 9               | <b>CLL1</b>   | Input        | First close sensor feedback(this sensor decreases speed)   | Normally open  |
| 10              | <b>CLL2</b>   | Input        | Second close terminal feedback(this sensor stops door movement)  | Normally open  |

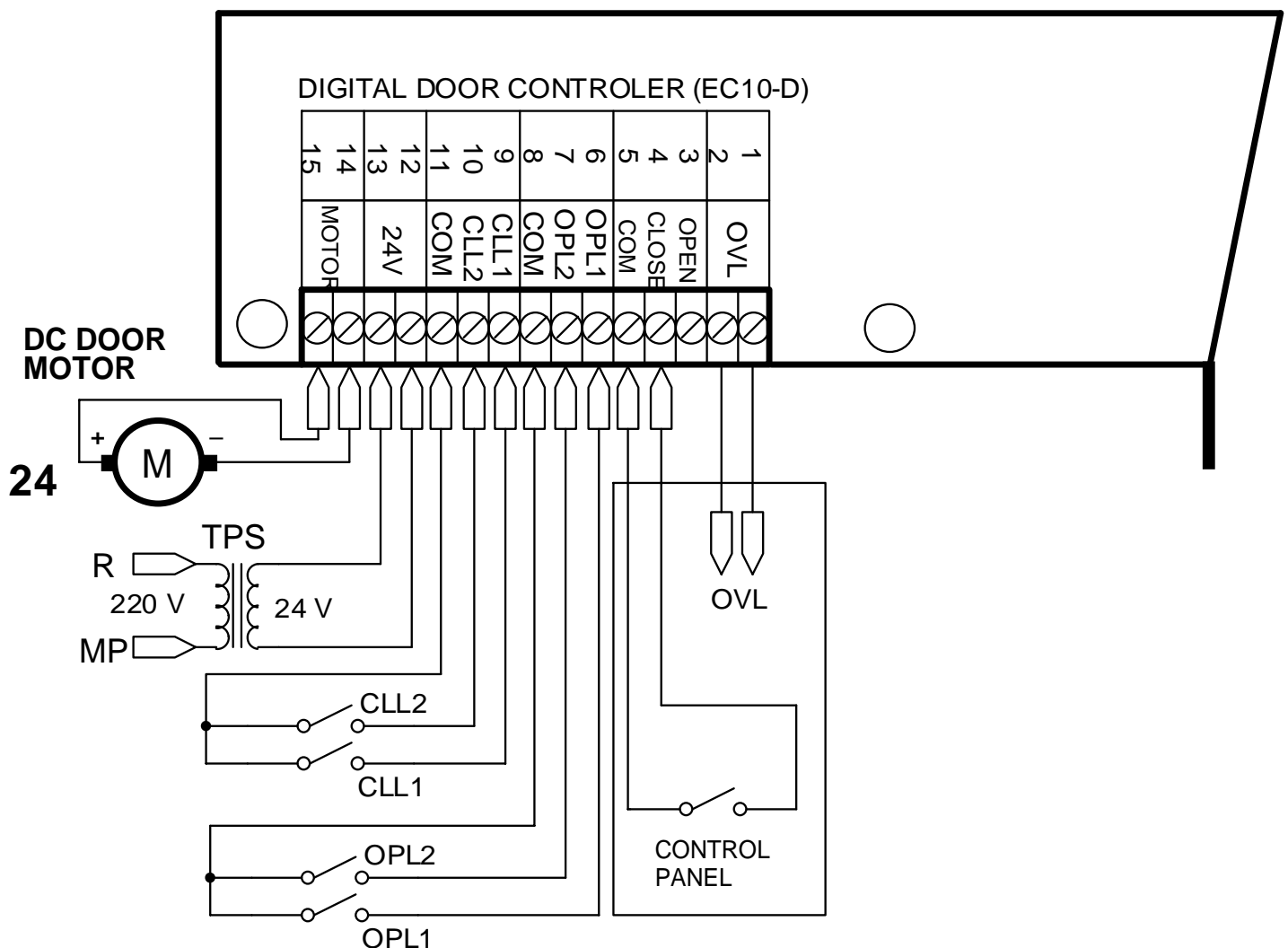
|       |              |   |  |      |
|-------|--------------|---|--|------|
| 11    | <b>COM</b>   | <div> <div>----</div> <div>—</div> </div> | CLL1 & CLL2 terminals common<br>terminal | ---- |
| 12,13 | <b>24 AC</b> | Input                                     | Circuit supply voltage                   |      |
| 14,15 | <b>MOTOR</b> | Output                                    | Output terminals to motor                |      |

Attention: The 5,8,11 terminals(**com**) are connected to each other from inside.

## 6- Wiring plan:

In picture below, the installation method of door controller to other door elements is shown.

**Note:** In case of connecting the motor to the system, while the 5 key is in **manual** mode and the 6 key is in **close** mode, the motor must close the door.



In this version, for closing the door, connect the **close** and **com** wires to each other and disconnect them for opening.



# Initializing System

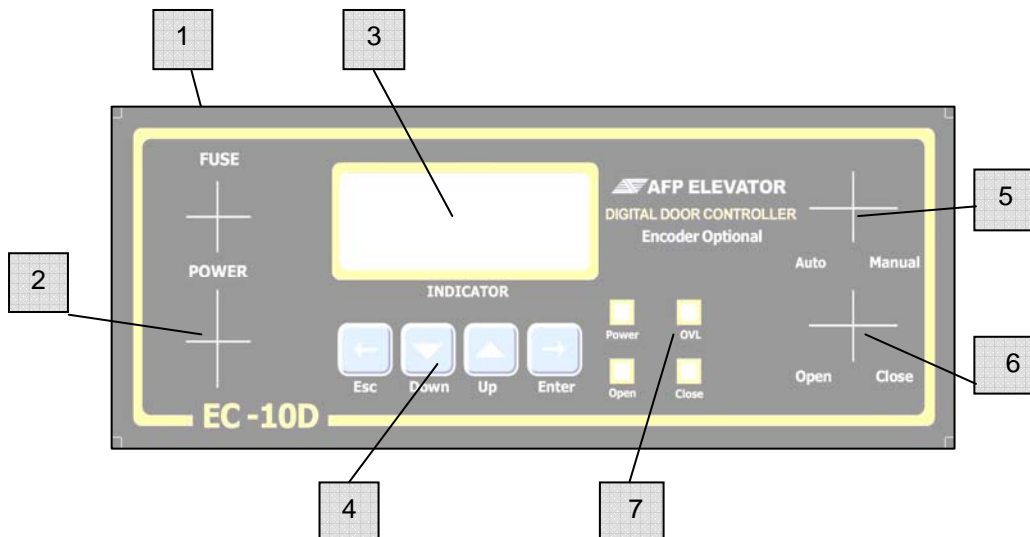
## *Chapter2*





## 1- Introduction to the panel parts:

| Row | System Panel                         |
|-----|--------------------------------------|
| 1   | Fuse (Use only 6 Ampere fuse)        |
| 2   | On/Off key                           |
| 3   | 4 digit 7 segment indicator          |
| 4   | Programming keys (ESC,DOWN,UP,ENTER) |
| 5   | Auto/Manual key                      |
| 6   | Open/Close key                       |
| 7   | LEDs (POWER,OVL,Open,Close)          |



## **2- Setting and Programming:**

While system is on, for setting the menu system, press both up and down keys in a same time. In this case, according to the system table, changeable parameters can be seen.

After choosing one parameter, by pressing ENT key the last amount is shown. Now you can change it by up and down keys, by pressing ENT key again, it will be saved. For exiting the menu without saving, press ESC key. In all the time of setting, drive acts on open and close command so the difference between parameters can easily be seen.

### **Definitions:**

1. Drive can be controlled in **manual mode** or **automatic mode**.
2. **Manual mode:** movement command is send by open/close key (the 6 key) on the panel. The door movement is controlled by two magnet switches in opening and closing cycle.
3. **Automatic mode:** In automatic mode, the door is commanding from the Control Panel. Thus, by connection between the 4 and 5 terminals, door is closed and by disconnection between them the door is opened.

### 3- Selecting the door type:

#### a) SS: SEMI SYSTEM

| Parameters | Descriptions                   | Range | default |
|------------|--------------------------------|-------|---------|
| 1.FSP      | Opening and closing fast speed | 0__20 | 10      |
| 2.OLS      | Opening low speed              | 0__20 | 4       |
| 3.CLS      | Closing low speed              | 0__20 | 8       |
| 4.END      | Exit                           |       |         |

#### Abilities:

- In semi sematic door, according to constant speed in opening and closing, one speed is defined for both directions.
- The **FLOr** and **current limit** capability, not exist in **semi sematic** mode.  
Cause of it **doesn't use**.

## b) FS: FULL SYSTEM

| Parameter name | Discriptions            | Range       | Preset    |
|----------------|-------------------------|-------------|-----------|
| <b>1.OFS</b>   | <b>Open fast speed</b>  | <b>0_20</b> | <b>13</b> |
| <b>2.CFS</b>   | <b>Close fast speed</b> | <b>0_20</b> | <b>7</b>  |
| <b>3.OLS</b>   | <b>Open low speed</b>   | <b>0_20</b> | <b>4</b>  |
| <b>4.CLS</b>   | <b>Close low speed</b>  | <b>0_20</b> | <b>4</b>  |
| <b>5.CrL</b>   | <b>Current limit</b>    | <b>0_20</b> | <b>15</b> |
| <b>6.END</b>   | <b>End</b>              |             |           |

### Abilities:

- In automatic doors, it will be need much force for opening the door because of the spring used in its structure. So oppenning and closing parameters can be seperatly set.
- The Current limit can only be set in Closing fast speed. The system automatically selects a ratio of setting in slow speed. This parameter turns the motor off to prevent to passenger's injury. Also by activating OVL relay, the DO input in control panel is activated and the control panel commands to door opening.
- If cabin with automatic door stops between floors, there is no spring to close the door and it is possible that door stays open. But with **FLOR**

abillitie in case of not seeing CLL1 or CLL2 ,after 5 seconds, the motor power increases slowly and it starts to move and closes the door completely. In this case **FLOR message** is shown.

- In automatic doors, after opening door completely, if the pressure of the spring can close it again(after passing the OPL2 magnet switch), it will reopen the door until seeing the OPL2 sensor again. But if in 10 seconds it doesn't reach OPL2, the voltage is disconnected .



# **The Professional setting**

## ***Chapter3***





## 1- The Professional System:

| Parameter name | Objection          | Range | Preset |    |
|----------------|--------------------|-------|--------|----|
|                |                    |       | dF     | dS |
| 1.OPA          | Open acceleration  | 0_20  | 10     | 10 |
| 2.OPS          | Open speed         | 0_20  | 13     | 13 |
| 3.OPd          | Open deceleration  | 0_20  | 6      | 18 |
| 4.OPL          | Open low speed     | 0_20  | 4      | 4  |
| 5.OPH          | Open holding       | 0_20  | 9      | 2  |
| 6.CLA          | Close acceleration | 0_20  | 7      | 7  |
| 7.CLS          | Close speed        | 0_20  | 7      | 13 |
| 8.CLd          | Close deceleration | 0_20  | 6      | 19 |
| 9.CLL          | Close low speed    | 0_20  | 4      | 8  |
| 10.CH          | Close holding      | 0_20  | 4      | 6  |
| 11.LA          | Lock acceleration  | 0_20  | 8      | 0  |
| 12.LS          | Lock speed         | 0_20  | 8      | 0  |
| 13.CL          | Current limit      | 0_20  | 15     | 17 |
| 14.Tc          | Not used           | -     |        |    |
| 15.nt          | Number(counter)    | ****  |        |    |
| 16.De          | Demo enable        | 0_20  | oF     | oF |
| 17.dO          | Demo open time     | 0_20  | 10     | 10 |
| 18.Dc          | Demo close time    | 0_20  | 10     | 10 |
| 19.Ds          | Default semi       |       |        |    |
| 20.Df          | Default full       |       |        |    |
|                | END                |       |        |    |

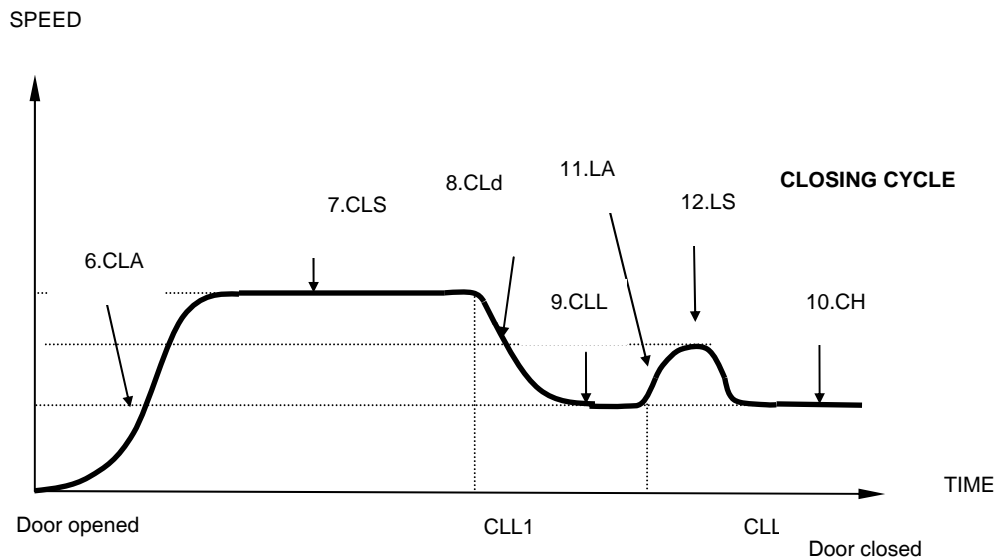
## **Abilities:**

- All abilities of semi sematic and automatic doors exist in this case and all of the parameters are reachable.
- In automatic doors, the OPH (Open Holding) amount must be set somehow, the power of the motor would be enough for holding the spring of the floor door. but not so much that the motor gets hot.
- In automatic doors, the spring for door lock after seeing CLL2, with changing LA & LS parameters, motor acceleration and speed is settable.
- The "nt" parameter is used for counting the traveling movements. Thus by opening and closing door one time is increased.
- With oPA increase, we will have faster opening acceleration.
- With oPd increase, we will have a faster break in the end of opening. (after oPL1)
- With CLA increase, we will have faster acceleration in the beginning of closing.
- With CLd increase, we will have faster break at the end of closing. (after CLL1)

## 2- Traveling time definitions:

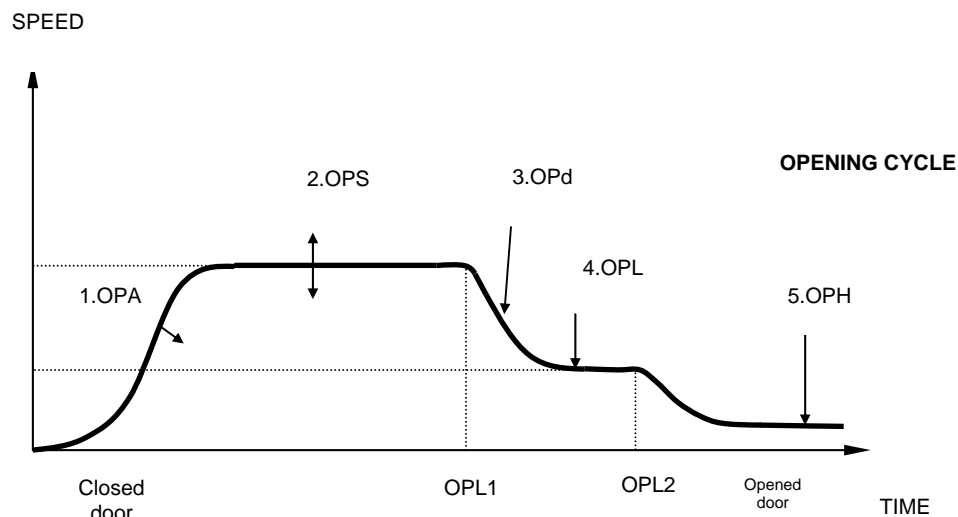
### a) Closing Cycle:

As it is shown in the figure below, after closing command, door starts closing with **6.CLA** acceleration until it reaches its constant speed (**7.CLS** parameter). In this while, door barrier sensibility works with **13.CL** parameter. As soon as reaching **CLL1** magnet, its speed decreases with **8.CLd** deceleration until it reaches **9.CLL** speed. Door moves with this speed until door reaches **CLL2** magnet in this time for locking (in full automatic door) at the end of movement more voltage which will be chosen by **11.LS** and its increase acceleration will be chosen by **10.LA** will be applied to the motor. After passing this stage motor voltage decreases to **10.CH** and stays the same.



## b) Opening Cycle:

The Opening cycle is easier. With opening command, door moves with **1.OPA** acceleration until it reaches **2.OPS** speed. Then by reaching **OPL1** sensor, **3.OPd** decelerations decreases speed until it reaches **4.OPL** speed. Now after reaching **OPL2** magnet, the door stops. The opening cycle reaches its end and door is loaded by **5.OPH** parameter.



### **3- Protection against sensors damage:**

- **Error in OPL2:**

Since the opening door command is exported, if **OPL2** sensor does not work in **5** seconds (the sensor is not correctly installed or it's damaged), motor power increases slowly. Because the spring of this floor door can be very strong and this way enough power for opening the door is developed. After that if, it is not still seen in maximum **5** seconds, it goes to Open Holding mode. In addition, **Ero2** message will be shown and it stops over current, which can cause damage to equipment.

- **Error in CLL2:**

As it was described in full automatic doors, if door doesn't reach it's end sensors, (sensor and magnet distance is more than it should be or sensor is damaged). first it turns to **FLor** mode to its power slowly increases but if it stays in this mode for **10** seconds and doesn't see **CLL2** sensor drive goes to **Close Holding mode** and this would be stop over current which causes damaged to equipments.



# Trouble Shooting

## *Chapter4*





## 1- Troubleshooting Table:

| Row | Error   | Description  |
|-----|---|--|
| 1   | Door shots strongly at the end of closing.            | <ul style="list-style-type: none"> <li>• Closing speed (<b>CLS</b>) is huge.</li> <li>• Closing deceleration (<b>CLd</b>) is low.</li> <li>• Closing low speed (<b>CLL</b>) is huge.</li> <li>• <b>CLL1</b> magnet switch doesn't work.</li> </ul> |
| 2   | Door stops while Opening and closing.                 | <ul style="list-style-type: none"> <li>• Break deceleration is too much (<b>Opd.CLd</b>).</li> <li>• Speed is low after seeing <b>OPL1</b> or <b>CLL1</b>.</li> <li>• There is a problem in door mechanics.</li> </ul>                             |
| 3   | Door doesn't move by move command.                    | <ul style="list-style-type: none"> <li>• There is a problem in Motors Wires.</li> <li>• There is a problem in control panel wires (<b>CM.C</b>).</li> <li>• Its better to be checked also in manual mode.</li> </ul>                               |
| 4   | Motor moves reverse.                                  | <ul style="list-style-type: none"> <li>• Two motor wires, which are connected to drive, must be reversed.</li> </ul>   |
| 5   | Door sometimes works fine and some times doesn't wok. | <ul style="list-style-type: none"> <li>• There is a problem in sensors magnet.</li> <li>• Sensors distance is too far from magnets.</li> <li>• Check the main voltage.</li> </ul>  |
| 6   | Door doesn't move to the end of closing.              | <ul style="list-style-type: none"> <li>• <b>CLL2</b> sensor is not installed at the end of movement.</li> </ul>  |
| 7   | Door doesn't move to the end of opening.              | <ul style="list-style-type: none"> <li>• <b>OPL2</b> sensor is not installed at the end of movement.</li> </ul>  |
| 8   | The Drive doesn't turn on.                            | <ul style="list-style-type: none"> <li>• Fuse is damaged.</li> <li>• Systems voltage is not enough.</li> <li>• Supply wires are not currently connected.</li> <li>• There is an internal problem in drive.</li> </ul>                              |

**:.Attention: Use only 6 Ampere fuse.:**



# Attachments

## *Chapter5*



## **1- How can you change the Drive Type?**

For changing drive type in the same time, hold both **ENT** and **ESC** keys and turn the system on. In this case **Pro.d** message is shown, now by up and down keys **1.SS & 2.FS & 3.PS** are shown. **Push ENT key to choose your chosen type.** To make sure turn the drive off and then on, pay attention after **AFP15** message on indicator drive type is shown (SS, FS, PS).

### **Important note:**

In this way, the drive type is changed but parameters preset will not change. For example if we select the automatic type to semi automatic, the parameters are set for automatics and it will not work properly. To solve this problem, first select the professional mode (**PS**) and choose the **19.ds** parameters as door default (the **20.df** parameter for automatic door), then do the upper steps for complete door type change.

## 2- Parameters difference in different situations:

| PS    | FS    | SS    |
|-------|-------|-------|
| 1.OPA |       |       |
| 2.OPS | 1.OFS | 1.FSP |
| 3.OPd |       |       |
| 4.OPL | 3.OLS | 2.OLS |
| 5.OPH |       |       |
| 6.CLA |       |       |
| 7.CLS | 2.CFS | 1.FSP |
| 8.CLD |       |       |
| 9.CLL | 4.CLS | 3.CLS |
| 10.CH |       |       |
| 11.LA |       |       |
| 12.LS |       |       |
| 13.CL | 5.CrL |       |
| 14.CC |       |       |
| 15.nt |       |       |
| 16.dE |       |       |
| 17.dO |       |       |
| 18.dC |       |       |
| 19.dS |       |       |
| 20.dF |       |       |
| End   | End   | End   |

### 3- Indicator Messages:

| Row | Message | Description  |
|-----|---------|--|
| 1   | oPEn    | Door is Opening  |
| 2   | CloS    | Door is closing  |
| 3   | oPL1    | OPL1 sensor is seen  |
| 4   | oPL2    | OPL2 sensor is seen  |
| 5   | CLL1    | CLL1 sensor is seen  |
| 6   | LoC     | Door is completely closed (CLL2 sensor is seen)  |
| 7   | FLOr    | Motor power increase for closing door between floors   |
| 8   | oUL     | Overload   |
| 9   | Ero2    | Damage or not working of open end sensor OPL2  |
| 10  | ErC2    | Damage or not working of close end sensor CLL2   |
| 11  | Prod    | Drive type change  |
| 12  | SS      | Choosing drive for semi door   |
| 13  | FS      | Choosing drive for full door   |
| 14  | PS      | Choosing professional drive (access to all parameters)   |
| 15  | AFP15   | After systems turning on, Software version is shown and after that choosing door type is shown |

**Note:**